

CLAIMS:

1. An air bag device for an occupant seated in a rearmost seat of a vehicle, wherein the vehicle has a rear 5 roof rail and a rear window glass, the air bag device comprising:

an air bag accommodated in an upper rear end portion of the vehicle in a folded state; and

10 an inflator, which supplies gas to the air bag to deploy the air bag,

wherein the air bag has a portion that is unfolded downward to be inflated between the rearmost seat and the rear window glass and a portion that is deployed to cover the rear roof rail.

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2. The air bag device according to claim 1, wherein the vehicle has a roof headlining, which covers the rear roof rail, wherein the air bag is accommodated between the rear roof rail and the roof headlining, and 20 wherein, when the air bag is deployed, the air bag separates the roof headlining from the rear roof rail.

3. The air bag device according to claim 2, wherein the vehicle has a roof panel, which is connected 25 to the rear roof rail and is covered by the roof headlining, wherein the air bag has a roof side inflation portion and a passenger compartment side inflation portion, wherein the roof side inflation portion is inflated between the roof panel and the roof headlining, and 30 wherein the passenger compartment side inflation portion is inflated to project toward the passenger compartment from between the rear roof rail and the roof headlining.

4. The air bag device according to claim 3, 35 wherein at least part of the roof side inflation portion

is accommodated between the roof panel and the roof headlining, and when not inflated is in an unfolded state forming a substantially planar surface.

5 5. The air bag device according to claim 4, wherein the roof side inflation portion has at least one securing portion secured to the vehicle.

10 6. The air bag device according to claim 5, wherein the securing portion is located at an end of the roof side inflation portion, which end extends forward of the vehicle.

15 7. The air bag device according to claim 5, wherein the securing portion includes a belt.

20 8. An air bag device for an occupant seated in a rearmost seat of a vehicle, wherein the vehicle has a rear window glass and a pair of rear pillars, with a rear pillar being located on each side of the rear window glass, the air bag device comprising:

25 an air bag accommodated in an upper rear end portion of the vehicle in a folded state; and

an inflator, which supplies gas to the air bag to deploy the air bag,

30 wherein the air bag has a portion that is unfolded downward to be inflated between the rearmost seat and the rear window glass and a portion that is deployed to cover the rear pillars.

35 9. An air bag device for occupants seated in rearmost seats of a vehicle, the air bag device comprising:

an air bag accommodated in an upper rear end portion of the vehicle in a folded state; and

an inflator, which supplies gas to the air bag to deploy the air bag,

wherein the air bag has a portion that is unfolded downward to be inflated between the rearmost seats and a 5 rear window glass of the vehicle and a portion that is inflated between the rearmost seats.

10. A device for protecting an occupant seated in a rearmost seat of a vehicle, the device comprising:

10 an impact determining device for determining that an impact has been applied to the vehicle or that there is a possibility that an impact will be applied to the vehicle; and

15 a movement restricting mechanism, which functions to restrict the rearward movement of the occupant seated in the rearmost seat based on the determination result of the impact determining device.

11. The device according to claim 10, wherein the 20 movement restricting mechanism includes:

an air bag, which is deployed between the rearmost seat and a rear window glass of the vehicle; and

25 a tension applying mechanism, which applies tension to the air bag, the tension being required for restricting the rearward movement of the occupant seated in the rearmost seat.

12. The device according to claim 11, wherein the 30 non-inflated air bag is accommodated in an upper rear end portion of the vehicle in a folded state, wherein the air bag has tension applying portions on left and right end portions of the air bag, wherein the tension applying portions are coupled to portions of the vehicle in the vicinity of both sides of the rear window glass, and 35 wherein, when the air bag is deployed, the tension

applying portions apply a predetermined tension to the air bag.

13. The device according to claim 10, wherein the
5 movement restricting mechanism includes at least one of a
first forward tilting mechanism that tilts a backrest of
the rearmost seat toward the front of the vehicle, a
second forward tilting mechanism that tilts a headrest
located on the backrest toward the front of the vehicle,
10 and a lifting mechanism that lifts the headrest from the
backrest.

14. An air bag device for an occupant seated in a
rearmost seat of a vehicle, the air bag device comprising:
15 an air bag, wherein the air bag has an upper bag
portion and a lower bag portion;
an inflator, which supplies gas to the air bag to
deploy the air bag between the rearmost seat and a rear
window glass of the vehicle; and
20 a thickness restricting mechanism, which restricts
the thickness of the air bag such that, when the air bag
is deployed, the thickness of the upper bag portion is
greater than the thickness of the lower bag portion in the
front and rear direction of the vehicle.

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15. The air bag device according to claim 14,
wherein the thickness restricting mechanism includes a
closed portion formed by partially joining opposing
portions of the air bag.

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16. The air bag device according to claim 15,
wherein the closed portion is arranged to reduce an
inflation amount of the lower bag portion to less than an
inflation amount of the upper bag portion.

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17. The air bag device according to claim 15,
wherein the closed portion is one of a plurality of closed
portions extending from the upper bag portion to the lower
bag portion, and wherein a portion of each closed portion
5 corresponding to the upper bag portion is narrower than a
portion of each closed portion corresponding to the lower
bag portion.

18. The air bag device according to claim 14,
10 wherein the air bag has a plurality of cells, wherein the
cells extend from the upper bag portion to the lower bag
portion, wherein the cells are inflated by gas supplied
from the inflator, and wherein a portion of each cell
corresponding to the upper bag portion has a greater
15 capacity than a portion of each cell corresponding to the
lower bag portion.

19. The air bag device according to claim 14,
wherein the air bag has a plurality of cells, which are
20 inflated by gas supplied from the inflator, and wherein
the cells corresponding to the upper bag portion have
greater capacity than the cells corresponding to the lower
bag portion.

25 20. The air bag device according to claim 14,
wherein the upper bag portion is deployed at a position
above the upper end of the rearmost seat.

30 21. The air bag device according to claim 14,
wherein the lower bag portion has a rigid portion for
improving flexural rigidity of the lower bag portion when
the air bag is deployed.

35 22. The air bag device according to claim 21,
wherein the rigid portion includes a lateral cell, and

wherein the lateral cell extends along the entire width of the lower bag portion and is inflated by gas supplied from the inflator.

5 23. The air bag device according to claim 21, wherein the rigid portion includes a dropping inflation portion, wherein the dropping inflation portion extends lower than the rear window glass and is inflated by gas supplied from the inflator.

10 24. The air bag device according to claim 14, wherein the air bag has side rigid portions on the left and right sides of the air bag for improving rigidity of the air bag when the air bag is deployed.

15 25. The air bag device according to claim 24, wherein each side rigid portion includes a vertical inflation portion, wherein each vertical inflation portion extends in the vertical direction and is inflated by gas supplied from the inflator.

20 26. An air bag device for an occupant seated in a rearmost seat of a vehicle, the air bag device comprising:
an air bag;
25 an inflator for supplying gas to the air bag to deploy the air bag between the rearmost seat and a rear window glass of the vehicle; and
30 side rigid portions, which extend in the vertical direction at the left and right sides of the air bag to improve the rigidity of the air bag when the air bag is deployed.

35 27. An air bag device for an occupant seated in a rearmost seat of a vehicle, the air bag device comprising:
an air bag accommodated in an upper rear end portion

of the vehicle in a folded state when the air bag not deployed;

an inflator, which supplies gas to the air bag, wherein, when the gas is supplied to the air bag, the air bag is unfolded downward to be inflated between the rearmost seat and a rear window glass of the vehicle; and

an unfolding direction controlling mechanism for controlling the unfolding direction of the air bag such that the air bag is unfolded along the rear window glass.

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28. The air bag device according to claim 27, wherein a rolled portion formed by rolling the non-inflated air bag functions as the unfolding direction controlling mechanism, and wherein, when gas is supplied to the air bag, the air bag is deployed as the rolled portion is unrolled along the rear window glass.

29. The air bag device according to claim 28, wherein, when the rolled portion is unrolled, the rolled portion generates a force to cause the air bag to approach the rear window glass.

30. The air bag device according to claim 27, wherein the unfolding direction controlling mechanism includes a guide mechanism, and wherein, when the air bag is deployed, the guide mechanism guides both sides of the air bag along vertical rims of both sides of the rear window glass.

30 31. An air bag device for an occupant seated in a rearmost seat of a vehicle, the air bag device comprising:

an air bag accommodated in an upper rear end portion of the vehicle in a folded state when the air bag not deployed;

35 an inflator, which supplies gas to the air bag,

wherein, when the gas is supplied to the air bag, the air bag is unfolded downward to be inflated between the rearmost seat and a rear window glass of the vehicle; and
a moving mechanism, wherein, when the air bag is
started to be unfolded or before the air bag is unfolded,
the moving mechanism moves at least the head of the
occupant seated in the rearmost seat toward the front of
the vehicle.

32. The air bag device according to claim 31,
wherein the moving mechanism includes at least one of an
advancing mechanism for moving the entire rearmost seat
forward of the vehicle, a first forward tilting mechanism
for tilting a backrest of the rearmost seat forward of the
vehicle, a second forward tilting mechanism for tilting a
headrest located on the backrest forward of the vehicle,
and a lifting mechanism for lifting the headrest from the
backrest.

33. An air bag device for an occupant seated in a
rearmost seat of a vehicle, the air bag device comprising:
an air bag; and
an inflator, which supplies gas to the air bag to
deploy the air bag between the rearmost seat and a rear
window glass of the vehicle,
wherein the air bag can be unfolded along the rear
window glass in a non-inflated state to be used as a sun
shade.